UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/573,217 | 05/04/2007 | Torsten Ziser | CH-8231/RC-234 | 4986 |

34947 7590 05/13/2010

LANXESS CORPORATION
111 RIDC PARK WEST DRIVE
PITTSBURGH, PA 15275-1112

| EXAMINER | |
|---|---|
| SALVITTI, MICHAEL A | |
| ART UNIT | PAPER NUMBER |
| 1796 | |
| MAIL DATE | DELIVERY MODE |
| 05/13/2010 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/573,217 | ZISER ET AL. | |
| | Examiner | Art Unit | |
| | MICHAEL A. SALVITTI | 1796 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *04 February 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-17,19-22,25 and 37-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17, 19-22, 25-25, 37-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-10, 12-17, 19-22, 24 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by US 2001/0006995 to *Obrecht* (herein after *Obrecht '995*). Supporting evidence is provided by the instant specification and *Perstop* "Toluene Diisocyanate Handling Guide".

Regarding claims 1-3: *Obrecht '995* teaches a non-aqueous composition (see Table 4, Example 17) comprising 20% of at least one crosslinkable organic medium (A) having a viscosity of less than 1,000 mPas at a temperature of 120°C (dimeric toluene diisocyante) and (B) a microgel that is not crosslinked by means of high energy radiation (hydroxyl-modified SBR gel). Toluene diisocyanate (TDI) is admitted to possess the requisite viscosities in the instant specification (see page 22, lines 25-26); *Perstop* (page 5) shows TDI with a viscosity of 0.5 cs at 135°C, which converts to 5 mPas.

Regarding claim 4: *Obrecht '995* is silent regarding whether the plurality of primary particles have approximate spherical geometry. However, this limitation has been held inherent, since the starting material is identical to the instant application since

the rubber particles are of the same tradename (OBR) and are described as having a diameter (*Obrecht '995* ¶ [0062]), which is a unit of spherical measurement.

Regarding claims 5-6: *Obrecht '995* (¶ [0062]) shows particle sizes of 37 nm and 53 nm. Inserting this number into Applicant's claim 5 formula [(d1-d2)/d2 x 100%], a result of 43% is seen.

Regarding claim 7: *Obrecht '995* teaches that the particles have a diameter such that 80% of the particles are >62 nm (*Obrecht '995* ¶ [0062]).

Regarding claims 8-9: *Obrecht '995* teaches that the particles are insoluble in toluene (~100% insolubility at 23°C; ¶ [0017]).

Regarding claim 10: *Obrecht '995* shows a glass transition temperature of -12°C for the microgel (¶ [0063]).

Regarding claim 12: Claim 12 is a product-by-process claim. The resulting microgel does not depend on its method of preparation, only the product. Nevertheless, *Obrecht '995* obtains the microgel through an emulsion polymerization process (¶ [0054]).

Regarding claims 13-14: *Obrecht '995*'s Example 3 (¶ [0059]-[0063]) is a styrene-butadiene rubber (SBR). The styrene-butadiene rubber has been interpreted to be a random copolymer. Homopolymers are also disclosed with sufficient specificity (e.g. polybutadiene "BR" ¶ [0009]).

Regarding claim 15: *Obrecht '995* modifies the microgel with a functional group reactive towards carbon-carbon double bonds (Example 2; grafting with HEMA).

Regarding claim 16: *Obrecht '995* teaches the crosslinkable organic medium (A) as crosslinking by reacting with heteroatoms (¶ [0024]). In the examples, TDI is crosslinking with the hydroxyethyl group from the hydroxyl-modified SBR gel (*Obrecht '995* Table 4).

Regarding claim 17: *Obrecht '995* shows the hydroxy-modified SBR gel of Example 17 as comprising 20% of the weight of the composition (Table 4, ¶ [0070]).

Regarding claim 19: *Obrecht '995* Example 17 shows an additive (stearic acid) and a filler (zinc oxide).

Regarding claim 20: *Obrecht* teaches preparing the composition by mixing in a kneader, with sufficient specificity (¶ [0046]).

Regarding claim 21: *Obrecht* shows mixing on a laboratory mill (¶ [0070]).

Although *Obrecht* does not teach preparing the composition by means of a homogenizer, bead mill or three-roller mill, these methods of mixing achieve the same function as the laboratory mill above, which is mixing the (A) and (B) components. Claim 21 is a product-by-process claim. The composition of *Obrecht* appears to be substantially identical to the claimed product of claim 21, as evident by anticipation of claim 20. "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). See MPEP § 2112.01.

Regarding claim 22: Although *Obrecht '995* is silent with respect to viscosity following the method of DIN 53018, the composition of *Obrecht '995* has been held to

possess a viscosity within this range, for the following reasons: the composition of *Obrecht '995* comprises a crosslinked SBR gel, and is contained in a resin on which claim 1 reads on. The viscosity of *Obrecht '995*, although not measured by the above standardized method, still flows, as shown by rheometry measurements (see Table 5 ¶ [0071]). The claimed range of viscosity from 25-20,000,000 mPas spans 6 orders of magnitude. Unless it can be shown otherwise, for the reasons set forth above, the viscosity of *Obrecht '995* will be held to be within this enormous range.

Regarding claim 24: *Obrecht '995* teaches the microgel as comprising a hydroxyl group ("hydroxyl-modified SBR gel"; Table 4).

Regarding claim 38: *Obrecht '995* Example 17 shows the crosslinker and the crosslinkable organic medium spatially separated until the addition of the crosslinkable organic medium; TDI is added last (¶ [0070]).

Claims 1-2, 13-14, 16-17, 22, 24-25, 37-38 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,533,598 to *Downey et al.* in view of instant specification

Regarding claims 1-2: *Downey* (Table VI, Formulation 5) teaches a non-aqueous composition comprising (A) 11.5 parts polyoxypropylene diol; diols are stated to have viscosities of at most 6,000 mPas (*Downey* col. 4, lines 19-20). The examiner takes official notice that even though *Downey* teaches these at 25°C, the viscosities will be even lower at 120°C. At least one microgel is present (hydroxyl terminated polybutadiene). The polybutadiene or *Downey* has not been crosslinked by means of

high energy radiation. The rubbers of *Downey* have been interpreted to be microgels, since the term has not been explicitly defined in the instant specification, and a definition of this term has not been made of record.

Regarding claims 13-14: *Downey* teaches homopolymer microgels based on a rubber (polybutadiene).

Regarding claim 16: In *Downey*, the organic medium of polyols are crosslinkable by functional groups containing heteroatoms (polyisocyanates from component “D” in formulation 5).

Regarding claim 17: *Downey* shows 7.3% polybutadiene in embodiment M.

Regarding claim 22: *Downey* teaches a viscosity of 300 mPas (300 cps; col. 8, line 55).

Regarding claim 24: *Downey* teaches the microgel comprising a hydroxyl group (“hydroxyl terminated polybutadiene”; see Tables II and IV).

Regarding claim 25: *Downey* teaches the crosslinkable medium comprising at least one polyol (polyoxypropylene diol; Table IV, embodiment M).

Regarding claim 37: *Downey* teaches mixing the organic medium (polyoxypropylene diol) with the microgel in embodiment M; the crosslinker (polyisocyanate; resin "D" is added in Table VI). This process will crosslink the crosslinkable medium (A).

Regarding claim 38: *Downey* shows the composition of claim 1 as an arrangement, wherein the crosslinker (polyisocyanate resin "D") is spatially separated from the crosslinkable organic medium (A). See *Downey* Table VI.

Regarding claim 40: *Downey*, formulation 5 shows the crosslinkable organic medium comprising polyoxyproylene diol, and the crosslinker comprising polyisocyanate.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. US 2001/0006995 to *Obrecht et al*. as applied to claim 1 above, in view of U.S. Patent No. 6,136,923 to *Cheung et al*.

Regarding claim 11: *Obrecht* teaches the composition of claim 1, as set forth above.

*Obrecht* does not explicitly state that the composition has a breadth of glass transition temperature greater than about 5°C. *Cheung* teaches that the breadth of glass transition temperature is controlled by varying plasticizer concentration (col. 2, lines 40-45). *Cheung* shows numerous examples of compositions having a breadth of $T_g$ greater than 5°C (*Cheung* see e.g. Example 1, Table 3; ~17°C breadth), and states that a large $\Delta T_g$ is desirable (*Cheung* col. 2, line 45-51). *Obrecht* and *Cheung* are analogous art in that they are drawn to the same field of endeavor, namely thermoplastic resin compositions utilizing crosslinked elastomers as impact modifiers.

At the time of the invention, it would have been obvious to a person having ordinary skill in the art to optimize the breadth of $T_g$ for the microgel of *Obrecht*, as taught by *Cheung*, with the motivation of imparing vibration dampening properties (*Cheung*, col. 2, line 50).

Claims 25, 37, and 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2001/0006995 to *Obrecht et al.*

Regarding claim 25: *Obrecht '995* teaches the composition of claim 1, as set forth above.

*Obrecht '995* is silent in showing embodiment wherein the crosslinkable medium (A) comprises at least one polyol. However, *Obrecht '995* suggests the addition of polyols (e.g. polyethylene glycol, bisphenol A, among others; ¶ [0043]) to the composition. At the time of the invention, it would have been obvious to a person having ordinary skill in the art to add polyols to the compostion of *Obrecht '995* with the motivation of crosslinking the compostion (*Obrecht '995* ¶ [0043]) to obtain a tougher composition.

Regarding claim 37: *Obrecht '995* teaches the composition of claim 1, as set forth above.

*Obrecht '995* shows mixing the (A) crosslinkable organic medium (TDI), (B) microgel and (C) crosslinker (TMQ/2,2,4-trimethyl-1,2-dihydroquinoline) together (¶ [0077]). *Obrecht '995* does not show an embodiment wherein (A) and (B) are mixed to form a mixture, followed by addition of the crosslinker. Changes in sequence of adding ingredients is *prima facie* obvious in the absence of new or unexpected results. In re

Burhans, 154 F.2d 690, 69 USPQ 330 (CCPA 1946); MPEP § 2144.04. At the time of the invention, it would have been obvious to a person having ordinary skill in the art to mix (A) and (B) prior to addition of (C), with the motivation of preventing premature crosslinking that may result in incomplete dispersion of the microgel filler in the crosslinkable organic medium.

Regarding claim 40: Upon mixing, the crosslinkable organic medium (A) comprises at least one polyol and the crosslinker (C) comprises at least one polyisocyanate in *Obrecht '995*.

Regarding claim 41: *Obrecht '995* shows mixing on a laboratory mill (¶ [0070]).

Although *Obrecht '995* does not teach preparing the composition by means of a homogenizer, bead mill or the-roller mill, these methods of mixing achieve the same function as the laboratory mill above, which is mixing the (A) and (B) components. Claim 21 is a product-by-process claim. The composition of *Obrecht* appears to be substantially identical to the claimed product of claim 21, as evident by anticipation of claim 20. "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir.1990). See MPEP § 2112.01.

## ***Response to Arguments***

The following responses are directed to the document entitled "Remarks" (pages 6-8), received February 4th, 2010.

**A)** Amendment to claims 5, 9, 23 and 38 to overcome minor informalities has been noted. The objections to claims 5, 9, 23 and 38 have been withdrawn.

**B)** Applicant's arguments with respect to the rejection of claims 1-25, 37-38 and 41 under 35 U.S.C. 102(b) by USPN 6,399,706 to *Obrecht* have been considered but are moot in view of the new ground(s) of rejection.

Amendment to the claims incorporating new limitations requiring a non-aqueous composition and 10-99 wt. % of crosslinkable organic medium has overcome the rejection set forth previously to *Obrecht '706*. *Obrecht* (US 2001/0006995) has been applied to the claims to address these new limitations.

**C)** In the absence of further argument directed toward *Cheung et al.* (USPN 6,136,923), the combination of *Obrecht '995* and *Cheung* is upheld.

## ***Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Bender (J. App. Poly. Sci. Vol. 9, pp. 2887-2894 (1965)) teaches SBR microgels in polystyrene matrices.

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### *Correspondence*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL A. SALVITTI whose telephone number is (571)270-7341. The examiner can normally be reached on Monday-Thursday 8AM-7PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/
Supervisory Patent Examiner, Art Unit 1796

/M. A. S./
Examiner, Art Unit 1796